

AMENDMENTS TO THE DRAWINGS

Attached hereto is one (1) new drawing sheet - Fig. 10 - that complies with the provisions of 37 C.F.R. § 1.84. The new drawing sheet incorporates the following drawing changes:

New Fig. 10, has been added, which shows the three types of LED light sources of claim 7 for emitting red, green, and blue light being radially placed.

It is respectfully requested that the new drawing sheet be approved and made a part of the record of the above-identified application.

REMARKS

Claims 1-24 are pending in the application. Claims 13-20 have been withdrawn from consideration. New claim 24 has been added.

Drawings

The drawings have been objected to because the three types of LED light sources of claim 7 for emitting red, green, and blue light being radially placed are not shown.

New Fig. 10, which shows this feature, has been added to overcome this objection.

The Examiner is respectfully requested to enter this drawing and withdraw this objection.

Claim Rejections – 35 U.S.C. § 102

(a) Claims 1, 22, and 23 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Chen. (USP 5,119,174). This rejection is respectfully traversed.

Chen discloses a light emitting diode display having a PCB base 12 provided with a concave portion having a bottom surface and an inclined surface, and a copper foil 21 provided on a top surface of the PCB base 12. The copper foil 21 is also provided on a surface of the bottom surface and the inclined surface to form a bowl shaped reflector dish 14. A LED crystal is provided on the copper foil 21 provided on the bottom surface. As shown in the figures, the copper foil 21 provided on the top surface of the PCB base 12, on the bottom surface (corresponds to the “reflecting surface” of the present invention), and on the inclined surface (corresponds to the “reflector”) is formed of a single piece material.

In Chen, however, the foil 21 covering the inclined surface is not “formed independently from the reflecting surface and provided above the reflecting surface,” as required in claim 1.

Claim 22, dependent on claim 1, is allowable at least for its dependency on claim 1.

Claim 23 is allowable at least for the similar reasons as stated in the foregoing with regard to claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(b) Claims 6 and 10 have been rejected under 35 U.S.C. § 102(b) as being anticipated by McDermott (USP 6,227,685). This rejection is respectfully traversed.

McDermott discloses, in Figs. 2, 8, and 9, an electronic wide angle lighting device that includes a reflector 8 and a LED element 33 provided inside a space defined by the reflector 8.

Although the LED element 33 is placed clear from the reflector 8, as shown in Fig. 2, McDermott merely discloses light ray R1 and R2 emitted from the LED element 33 in a direction toward the front of the LED element 33, and does not disclose or suggest that it emits light “in a rear direction” of the LED element 33.

Moreover, in the lighting apparatus of McDermott, a chip component (e.g., an LED light source), which can be reduced in size and weight, cannot be mounted directly on a reflecting surface because the backside of the reflecting surface in McDermott is spherical.

In the claimed invention of the present application, however, since a chip component can be directly mounted on a circuit board having a reflecting surface on its backside, the entire apparatus can be made smaller and lighter. Further, since the light source can be placed near the

reflecting surface, emitted light can be efficiently used for required area of light collecting (reflecting) surface.

Yet further, in the present invention, LEDs of RGB can integrally be configured, and control of color temperature can be performed thereby.

Claim 10, dependent on claim 6, is allowable at least for its dependency on claim 6.

Further, as recited in claim 10 of the present application, a through hole may be provided on the circuit board, and the reflector is fitted in the hole. By such configuration, the reflector can be replaced and changed for many purposes.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

Claim Rejections – 35 U.S.C. § 103

(a) Claim 2 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Koay et al. (US 2002/0047130). This rejection is respectfully traversed.

Claim 2, dependent on claim 1, is allowable at least for its dependency on claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(b) Claims 3, 4, 11, and 12 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Kitano et al. (USP 2003/0216151). This rejection is respectfully traversed.

Claims 3, 4, 11, and 12, dependent on claim 1, are allowable at least for their dependent on claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(c) Claim 5 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen in view of Mouyard et al. (USP 4,254,453). This rejection is respectfully traversed.

Claim 5, dependent on claim 1, is allowable at least for its dependency on claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(d) Claim 7 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over McDermott in view of Kitano. This rejection is respectfully traversed.

Claim 7, dependent on claim 6, is allowable at least for its dependency on claim 6.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(e) Claims 8 and 9 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over McDermott in view of Sommers (US 2003/0180037). This rejection is respectfully traversed.

Claims 8 and 9, dependent on claim 6, are allowable at least for their dependency on claim 6.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

(f) Claims 1, 5, and 21-23 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over James et al. (USP 4,306,716) in view of Chen. This rejection is respectfully traversed.

James discloses a light guide array display having a circuit board 70 provided with a plurality of diode segments 42-44, a light control member 72 provided with a plurality of light control portions 76-78 having entrance apertures 86-88, such that when the circuit board 70 is

mounted on the light control member 72, the diode segments 42-44 are positioned inside the entrance apertures 86-88.

As acknowledged by the Examiner, James does not disclose a reflecting surface formed on the surface of the circuit board.

Therefore Examiner relies on the Chen reference to show that a circuit board having a reflecting surface with LED light source mounted on it is known in the art.

Applicants respectfully submit, however, that as stated in the foregoing with the Section 102 rejection, Chen merely discloses a copper foil 21 that continuously and integrally covers the top surface of the PCB base 12, the bottom surface (corresponds to the “reflecting surface” of the present invention), and the inclined surface (corresponds to the “reflector”), and thus the copper foil 21 covering the inclined surface is not “formed independently from the reflecting surface and provided above the reflecting surface,” as required in claim 1.

Claim 5, 21, and 22, dependent on claim 1, are allowable at least for their dependency on claim 1.

Claim 23 is allowable at least for the similar reasons as stated in the foregoing with regard to claim 1.

The Examiner is respectfully requested to reconsider and withdraw this rejection.

New Claim

Claim 24, dependent on claim 6, is allowable at least for its dependency on claim 6.

Moreover, in the claimed invention of the present application, the reflector is formed into a substantially rectangular shape. Therefore, light can more efficiently be emitted compared to a reflector having a circular shape (see attached Drawing A).

More specifically, in McDermott (the reference cited to reject claim 6), envelope of the emitted light is conical. Therefore, light is inefficiently emitted beyond an angle of view. In the claimed invention, however, stronger light can be emitted to the subject by the same amount of light.

A favorable determination by the Examiner and allowance of this claim is earnestly solicited.

Conclusion

Accordingly, in view of the above amendments and remarks, reconsideration of the rejections and objections, and allowance of the pending claims are earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Maki Hatsumi (#40,417) at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

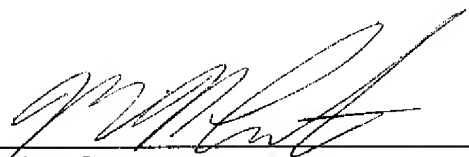
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or to credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

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Respectfully submitted,

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Attachments: Drawing A  
One (1) New Drawing Sheet - Fig. 10